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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/527,281	03/17/2000	Robert Bruce Davies	RBD-IC-2000	3765

7590 01/24/2003

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EXAMINER

CRUZ, LOURDES C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 01/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/527,281

Applicant(s)

DAVIES, ROBERT BRUCE

Examiner

Lourdes C. Cruz

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 17-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

All figures showing a cross-sectional view of the invention are improperly crosshatched. All of the cross hatching patterns should be selected from those shown on page 600-81 of the MPEP based on the material of the part. Also see 35 CFR 184 (h)(3) and MPEP 608.02.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pogge et al. (US5998868) in view of Hantusch (US4286374).

Pogge et al. teaches a semiconductor device comprising (See Figs. 2A, 4B):

A die attach surface (base, part of the substrate under the pedestals) 400 having a first pedestal 205a, a first semiconductor die 201a having a first surface formed with a first cavity 203a for mounting the first semiconductor die on the first pedestal.

Pogge et al. also teaches:

- A recessed region 212 for forming a dielectric volume (Col. 6, 55+)
- The dielectric volume comprising dielectric material

- A surface of the pedestal includes a conductive material (See Fig. 6, balls 603) for operating as a ground shield of the first semiconductor
- A second pedestal 205b on the base; and a semiconductor die 201b having a first surface formed with a cavity for mounting on the second pedestal
- See that material in 212 is between dies
- A conductor disposed for coupling an electrical signal between the first and the second dies (Col. 7, 50+)
- See that the base is generally planar and that it is a dielectric (Col. 7, lines 30+)
- See that the prior art teaches that the chips are interconnected. Moreover, carriers have internal traces. Therefore, the prior art discloses conductive coating formed over some exposed surfaces of the base and pedestals
- Small cavity formed on a top surface of the pedestal (see small cavities where 603 are placed)

See that Pogge et al. fails to specifically disclose

- a gaseous dielectric material
- Specifically describe the dimensions of the pedestal, and the dimensions of its sides in comparison to one another, angles and

specific shapes forming the pedestals (such as trapezoidal, frustum), height of frustum and the shape of its base in terms of width

- an inductor

However:

See that gaseous dielectrics (such as air dielectrics, air voids) are well known and commonly used in the semiconductor art for the purpose of providing a suitable dielectric layer that will isolate components from one another.

Also see that the dimensions of the pedestal or its sides in comparison to one another, angles between sides, and the pedestal's specific shape, width of base or height do not cause any critical or unexpected results to the device's operation. Rather it is merely an obvious design choice determined by routine experimentation. In *Aller*, the court stated "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456 105 USPQ 233,235 (CCPA 1995).

Additionally, see that (Col. 6, lines 22+) the prior art discloses that different shapes/sized chips can be used. It is inherent from the teachings of the prior art that different shapes/sizes of chip will require pedestals of different shapes/sizes.

Moreover, inductors as well as other passive components are well known in the art and widely used by semiconductor artisans in order to enhance the

performance of the IC. See, for example, that Hantusch teaches the use of inductors (Col. 1, lines 5+)

Therefore:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the invention of Pogge et al. in view of Hantusch with::

- A gaseous dielectric for the dielectric material
- pedestals having the shape of a frustum, a trapezoid, and/or with pedestal with different heights, widths of base, different angles between them, etc.
- inductors

in order to provide the device with a dielectric that will provide good isolation (as gas dielectrics are well known in the art), pedestals that will conform to differently sized/shaped chips, as well as to incorporate the well known passive component (as taught by Hantusch) in order to enhance the performance of the IC.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lourdes C. Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 10-6:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz
Examiner
Art Unit 2827



Lourdes Cruz
January 17, 2003



KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
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